

PATENT CLAIMS

1. Camera carriage with a running gear and lighting equipment for inspecting piping, wherein at least two cameras (10, 11) are disposed in a common housing (4) and at least one camera comprises means for changing the viewing angle, characterized in that the means (7, 9, 2) are formed as gimballed bearings of the housing (4) with motors for swivelling and/or rotating the housing (4) about at least one axis, in particular about an axis (5) orthogonal to the longitudinal axis (6) of the carriage.
2. Carriage as claimed in claim 1, characterized in that additional means (9, 7, 2) for swivelling and/or rotating the housing (4) about a second axis (8), in particular parallel to the longitudinal axis (6) of the carriage and orthogonal to the first axis (5).
3. Carriage as claimed in one of the preceding claims, characterized in that the camera optics of the second camera (10) are oriented in the direction opposite to the camera optics of the first camera (11).
4. Carriage as claimed in claim 3, characterized in that the two cameras (10, 11) are located on the same optic axis (12).
5. Carriage as claimed in one of claims 1 to 3, characterized in that the two cameras (10, 11) are disposed in their optic axes (12) at a specified angle, for example 45 degrees, with respect to one another.
6. Carriage as claimed in one of the preceding claims, characterized in that at least one camera (10, 11) is equipped with a wide-angle lens, in particular a fisheye lens, acquiring a hemispheric space.

7. Carriage as claimed in one of the preceding claims, characterized in that at least one camera (10, 11) is equipped with a zoom lens acquiring a limited observation region in great detail and in high resolution.

8. Carriage as claimed in one of the preceding claims, characterized in that at least one camera (10, 11) is a thermal imaging camera.

9. Method for the inspection of pipe sections and/or the display of an inspection result by means of a carriage, characterized in that, in addition to the documentation of the inspection of details, an exposure of a development of the circumference of the inspected pipe section is taken.

10. Method for the inspection of pipe sections by means of a carriage and/or the display of an inspection result according to claim 9, characterized in that the inspection of details takes place separately in time from the exposure of the development.

11. Method for the inspection of pipe sections by means of a carriage and/or the display of an inspection result according to claim 9 or 10, characterized in that the exposure of the development is taken during a traversal through the pipe section to be inspected, preferably in one direction and preferably at constant speed.

12. Method for the inspection of pipe sections by means of a carriage and/or the display of an inspection result according to claim 9, 10 or 11 characterized in that an automatic assignment of one or several of the inspected details to a locus of the developed circumference takes place.

13. Method for the inspection of pipe sections by means of a carriage and/or the display of an inspection result according to one of claims 9 to 12, characterized in that the inspection result is displayed as an image on a monitor, the measuring of a line segment, of a circumference and/or an area takes place by means of a cursor on the monitor image of the circumference development.

14. Method for the inspection of pipe sections by means of a carriage and/or the display of an inspection result according to one of claims 9 to 13, characterized in that a display of a detail list on the monitor image, an indication of an element of the detail list and/or of a detail of a circumference development and/or a total image of the circumference development in different image regions takes place simultaneously on the monitor.
15. Method for the inspection of pipe sections by means of a carriage and/or the display of an inspection result according to one of claims 9 to 14, characterized in that an assignment between the image regions takes place automatically by indicating in an image region.
16. Method for the inspection of pipe sections by means of a carriage and/or the display of an inspection result according to one of claims 9 to 15, characterized in that the position of the cut for the display of a developed pipe circumference is automatically specified by a gravity sensor.
17. Method for the inspection of pipe sections by means of a carriage and/or the display of an inspection result according to one of claims 9 to 16, characterized in that image distortions are automatically equalized by means of software into a true image of the pipe circumference.